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THE RELATIONSHIP OF THE PULP AND PAPER  
INDUSTRY TO STATE AND LOCAL AREA  
DEVELOPMENT IN GEORGIA

A THESIS

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THE RELATIONSHIP OF THE PULP AND PAPER  
INDUSTRY TO STATE AND LOCAL AREA DEVELOPMENT IN GEORGIA

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## SUMMARY

During the past twenty-five years the pulp and paper industry has become a major segment of an industrialized Georgia. During this period the industry through its purchases and use of rural land has become a major factor in the economy of many local areas of the state.

Growth of the pulp and paper industry has taken place during a period of drastic change on Georgia's rural and urban scene. Declines in agriculture, lumbering and manufacturing in many rural sections of the state have been followed by a migration of people to more urban areas and have resulted in economic depression of such rural areas.

The pulp and paper industry has been active in land acquisition in many rural areas. Although it has been held responsible for the displacement of farming and lumbering, the findings of this study indicate that this is not the case. Actually, the pulp and paper industry has been found to be a contributing factor to the economy of most areas where it is active.

The pulp and paper industry faces a shortage of pulpwood in Georgia in about 15 years. If means to improve pulpwood supplies can be developed, the industry can continue to grow as a basic industry in Georgia and can greatly increase its economic contribution to local areas and communities.



This study, in identifying some of the problems which face many rural areas of Georgia, finds that there is a large amount of un-used and mis-used rural land in Georgia. Much of this land is forest land, and some means for developing and redeveloping it are suggested.

## CHAPTER I

### THE PULP AND PAPER INDUSTRY

During the past thirty years, Georgia has experienced broad and rapid changes in its economy. Diversification and mechanization of agriculture and rapid expansion of industrial and urban activity have drastically altered traditional patterns of life in the state. These changes force a continuing appraisal of Georgia's economic framework and its relationship to the people and communities of the state.

The advent of the pulp and paper industry in Georgia presents particular implications to three of the state's basic economic activities--agriculture, forestry, and industry. As the pulp and paper industry continues to grow, it plays an increasingly important role in all three. Effects of the industry and its operations are felt in practically every area of Georgia. Present trends indicate that the pulp and paper industry will assume a vital role in the economy of many local areas of Georgia in the future.

Continued growth of the pulp and paper industry is directly related to the increasing consumption of products which are derived from wood pulp. Modern technology continues to find many new uses for this woodpulp, not only for paper and paper products, but also for a broad range of chemical and synthetic products. These products include rayon and acetates, paints, films, explosives, and many others. Estimates of future demand for woodpulp for chemical and synthetic products suggest that within two decades as much wood will be used in their

manufacture as is now used for all paper products of the pulp and paper industry (1).

As a background to later chapters which deal with the role of the pulp and paper industry in the rural areas and urban communities of the State of Georgia, the following sections of this chapter identify the pulp and paper industry and describe its operation. A brief history of the industry in the United States and in the South and Georgia, in particular, and a discussion of the industry's future are included in this chapter.

#### Historical Background

The production of kraft paper was the original basis for the establishment of the pulp and paper industry in the United States. Kraft paper is the brown wrapping and bag paper familiar to every grocery shopper. This paper takes its name from the Swedish word for "strength." It is manufactured from softwood pulp by a process introduced into this country from Europe in 1909.

The first plant to produce kraft paper in this country was established at Roanoke Rapids on the Roanoke River in North Carolina in 1909. This plant, which is still in operation, was the forerunner of the modern pulp and paper industry.

In the years following 1909, growth of the pulp and paper industry in the country proceeded rapidly, particularly in the Northeast, where both markets for paper products and an adequate supply of pulpwood were present. In the South, mainly due to a lack of expanding markets for paper and paper products, growth of the pulp and paper industry proceeded slowly.

As national consumption of paper and paper products increased, timber supplies in the Northeast were rapidly depleted, causing the industry to move west into the Great Lakes region for pulpwood. In a few years, these supplies of timber became inadequate for the rapidly increasing demands of the pulp and paper industry.

The shortage of pulpwood in the North and improving markets in the South for woodpulp products combined to make it feasible for the pulp and paper industry to establish new mills in the South around 1929. The International Paper Company built a large kraft mill in Mobile, Alabama, in 1929. In 1931, the same company built another mill in Panama City, Florida. This mill produced corrugated paper board for box manufacture, a new product for the pulp and paper industry at the time.

These pulp and paper mills were able to maintain production and actually showed a profit during the depression. This fact, added to increasing consumption of paper products in the region and a potentially adequate pulpwood supply, led to a rapid expansion of the pulp and paper industry in the South during the late 1930's.

The first pulp and paper mills in Georgia were established in 1936 when two mills, in Savannah and Brunswick respectively, were built. These mills were established primarily for the production of kraft paper.

Added impetus to the growth of the pulp and paper industry in the South was provided in 1941 when a process developed by the late Dr. Charles H. Herty of Savannah to produce newsprint paper from pine pulp was first used commercially. Since that time, newsprint production has become a significant activity in the Southern pulp and paper industry.

New products from pine pulp and growing markets in the South,

coupled with a vast and potentially renewable supply of pulpwood in the region, have made possible a tremendous expansion of the pulp and paper industry since the second World War. Nearly three-fourths of the growth of the industry since the war has taken place in the twelve-state region along the Atlantic and Gulf coasts from Virginia to Texas (2). This area contains some 194 million acres of wooded land, about forty per cent of the nation's total. This Southern commercial forest now produces about two-thirds of the pulpwood used in the United States (3).

#### Factors Affecting Plant Location

The pulp and paper industry is primarily a resource-oriented operation. The industry depends upon two basic resources--water and timber. Of the two, timber is the least critical at present as a factor affecting plant location because of adequate transportation for wood from areas not adjacent to the mills. Water, however, has become an increasingly difficult problem for the industry.

The availability of large amounts of relatively pure, fresh water is a basic consideration in the location and operation of any pulp and paper mill. The mills previously tended to locate in areas where it was not necessary to apply sewage treatment to used process water. In the South these two requirements were most often met in coastal areas where large amounts of water were available, and where effluent process water could be readily discharged into streams at points near the coast.

With stream pollution a serious problem in nearly all areas, most new mills are required to apply sewage treatment to effluent process water before discharging it. The scope of this treatment is illustrated

by the fact that about 70,000 gallons of water are required in the production of one ton of wood pulp (4). A typical pulp and paper mill producing around 600 tons of pulp daily requires more than forty million gallons of water a day--about the same amount as a city of 500 thousand people.

Recent acceptance by health authorities of oxidation pond methods of sewage treatment now makes it possible for mills to locate in upstream areas where operation was previously not feasible. Georgia's newest mill, the Continental Can Company's plant on the Savannah River above Augusta, treats more than thirty million gallons of water a day in a 1400 acre oxidation pond (5).

Other disposal problems which face the pulp and paper industry are those connected with smoke and fumes. Plant odors are particularly obnoxious in areas which have potential or existing resort facilities and a solution to the odor problem is one which the industry must find if it is to be welcome in many communities in the future.

At present one solution seems to lie in the reclamation of chemicals from plant vapors. For instance the pulp and paper industry, by reclaiming turpentine from these vapors could match production of the entire turpentine industry (6). As traditional sources of turpentine and rosin become limited it becomes economically feasible for the pulp and paper industry to manufacture these products from its own wastes. A growing shortage of large pine stumps for turpentine and increasing costs in hand-working rosin faces combine to accelerate the manufacture of these products by the pulp and paper industry. Research by the industry also indicates that as demand for chemicals and synthetic products

grows, reclamation of chemicals from smoke, fumes and also from liquid wastes, will eventually make it economically feasible to eliminate many problems of obnoxious wastes.

In the case of timber resources, the mills must have an adequate supply of pulpwood available within the region in which they are located. Since a pulp and paper mill is not able to relocate as were the sawmill and turpentine operations which formerly utilized much of the timber in the South, this pulpwood supply must also be adequate for future requirements of the mills.

Originally, the pulp and paper mills depended upon the same coastal areas where they located for their supplies of pulpwood. Increased demand for pulpwood and increasing competition for wood between the mills has now extended the range from which the mills draw their supply of pulpwood to include practically the entire South.

#### Pulpwood Procurement and Supplies

The pulp and paper companies obtain their supply of pulpwood through a dealer-producer system operated by the individual companies. Under this system, a pulp and paper company contracts with an independent operator, usually a local timber company, for a supply of pulpwood from the area in which the operator is located. Often the companies assist these dealers in buying equipment and land necessary to handle and store the pulpwood. The dealers are assigned periodic quotas by the company which they represent. These quotas are met in several ways, depending upon the operation of the particular dealer.

The dealer may operate as a purchaser of wood from local pulpwood producers. In this case, he buys the wood which is delivered to

his woodyard and loads it for shipment to the mill. The dealer is paid on a unit basis by the mill for whom he is handling pulpwood.

More often, the dealer has his own crews which harvest pulpwood bought from local woodland owners. In this instance, he sells wood to the pulp and paper company as well as representing the company in its other local purchases.

A dealer may also contract with sawmill operators in his area for a supply of pulpwood such as tops and limbs not used for sawtimber, or for residual chips from a sawmill operation.

Regardless of how an individual dealer may choose to operate his woodyard, the pulp and paper industry is able to maintain logistic control over its supply of wood by use of the dealer-producer system. Another advantage to the industry in the dealer-producer system is that by having a local representative, the industry is better able to carry out its tree planting and public relations programs which are aimed at stimulating pulpwood production by landowners. As supplies of pulpwood become limited, these representatives can be expected to play an important role in assessing and improving productivity of local woodlands.

Uncertainty over supplies of pulpwood from farm and other private forests has led the pulp and paper industry to the development of large, company-owned forests. In the twelve-state region along the Atlantic and Gulf coasts from Virginia to Texas, the pulp and paper industry owns or leases 20.4 million acres of the 193.3 million acres of commercial forest in the region (7). This industry forest currently produces about 35 per cent of the pulpwood used each year by the pulp and paper industry in the South.



A detailed analysis of use and ownership of land in Georgia by the pulp and paper industry is included in the following chapters of this study.

Pulp and paper mills generally maintain a supply of pulpwood at the mills to meet production needs for several weeks. The mills draw upon this supply to keep their operation a continuous process. Since pulpwood retains moisture content needed for optimum processing only about thirty days, the logistics of pulpwood supply must be closely coordinated with output of the mills.

#### The Pulp and Paper Industry in Georgia

The pulp and paper industry operates eleven pulp and paper mills in the state. In addition to these mills, the industry owns or leases about three and a half million acres of Georgia's twenty-six million acres of commercial forest (8). The industry also operates about one hundred and thirty mechanical woodyards in conjunction with the dealer-producer system in Georgia.

The map and table on page 9 illustrate the location and production capacity of the pulp and paper mills in Georgia.

The pulp and paper industry has an aggregate investment in the state of about \$720,000,000. This investment is comprised of some \$507,000,000 in the mill facilities, about \$211,000,000 in land and leases, and about \$2,000,000 in local woodyards and equipment (9).

In 1958 the pulp and paper industry purchased \$81,000,000 worth of pulpwood in the state. The industry directly employed 12,500 people and had a payroll of \$60,556,000. In addition, an estimated 16,700

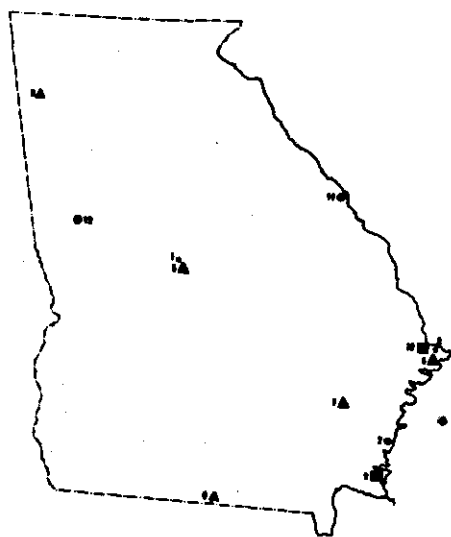


Figure 1. Location of Georgia's Pulp and Paper Mills, 1959.

Table 1. Georgia's Pulp and Paper Mills and Their Production

Plant Location	Map Code and Company	Capacity 24 Hours (Tons)
Macon	(1) Armstrong Cork Co.	200
Brunswick	(2) Brunswick Pulp and Paper Co.	460
Savannah	(3) Certain-teed Products Corp.	60
Savannah	(4) Continental Can Co.	600
Macon	(5) Georgia Kraft Co.	675
Valdosta	(6) Owens-Illinois Glass Co.	630
Jesup	(7) Rayomier, Inc.	675
Rome	(8) Rome Kraft Co.	725
St. Marys	(9) St. Marys Kraft Corp.	800
Savannah	(10) Union Bag-Camp Paper Corp.	2,050
Augusta	*(11) Continental Can Co.	350
Manchester	*(12) Southern Land, Timber, and Pulp Corp.	400

\*Under Construction

Source: Southern Pulp and Paper Manufacturer, Vol. 22, No. 10 (Oct. 1959)

people were employed in the harvesting and transportation of pulpwood in Georgia (10).

The value of the pulp and paper industry's production in Georgia in 1959 amounted to more than \$530,000,000, an increase of about \$500,000,000 in the past twenty years (11). In terms of value added by manufacture, the pulp and paper industry is now the state's third largest manufacturing activity. It is exceeded by the textile industry and the transportation industry, respectively (12).

The basis for the pulp and paper industry's operation in Georgia is primarily one of forest utilization. The industry draws its supply of pulpwood from some 26,000,000 acres of commercial forest in the state. With nearly 80 per cent of Georgia's commercial forests in farm or other private ownership, and in the hands of an estimated 400,000 owners, the pulp and paper industry must make a continuing appraisal of the use and production of Georgia's forest land.

Of primary concern to the industry is the fact that although the farm woodlands in the state represent nearly half of the state's commercial forest they produce only about 8 per cent of the pulpwood used in Georgia. Another indication of poor farm forest productivity is the fact that these same farms also produce only about a fifth of the state's sawtimber (13).

Also a major concern to the pulp and paper industry is the low productivity of the state's private non-farm woodlands. These woodlands represent about 40 per cent of the commercial forests in Georgia. Although they produce more than 40 per cent of the annual pulpwood crop, over half of this forest is rated as being poorly productive by the U. S. Forest Service (14).

Government timber holdings, about ten per cent of the state's commercial forest, have become almost entirely devoted to the production of sawtimber, rather than pulpwood as their stands of timber have matured.

These situations, coupled with the fact that only about one half of the private and farm woodlands are devoted to pine-type growth to which the industry looks for most of its supplies, present the industry with a serious problem in meeting the increasing demand for pulpwood (15).

The industry is currently consuming about four million cords of pulpwood a year in Georgia. This represents the annual production of as much as eight million acres of pine-type woodland, based on growth and harvesting of half a cord per acre, fairly high average production. With demand for pulpwood expected to be as much as ten million cords within the next 15 years, future demands for pulpwood, if produced at the same rates, would require the use of an additional twelve million acres of woodland, a total of about twenty million acres.

The pulp and paper industry is faced with developing most of its future supply of wood from farm and private woodlands. These lands are the least productive timberlands in the state. About 98 per cent of these forests are in tracts of less than 100 acres in size (16), a situation which presently precludes timber growing as a feasible activity. The problem of meeting future demands for pulpwood is a serious one for the industry.

The scope of this problem, even at present, is further illustrated by the fact that the harvest of yellow pine in Georgia presently exceeds 90 per cent of annual growth (17).

A detailed analysis of the relationships of the pulp and paper industry and the use and production of rural land is included in the following chapters.

The future of the pulp and paper industry in Georgia is one of great promise, even though supplies of pulpwood will probably become scarce. The state has the potential of greatly improving its timber production, and it is upon this potential that the pulp and paper industry has based much of its investment in Georgia.

The future of the pulp and paper industry is related to two basic factors: one, the continuing increase of population in the United States; the other, the continuing increase in per capita consumption of paper and paper products. Other factors also bear upon the future of the industry, particularly in Georgia. They include continuing industrial expansion and increases in economic activity which are necessary to provide new markets and uses for products of the industry. At present the rapidly growing realm of new markets and uses for paper products seems to present the industry with opportunities whose limits cannot be defined, assuming the continuance of adequate supplies of pulpwood.

The 180,000,000 people of the United States now consume about 450 pounds of paper products per person a year, a total of about four million tons annually. By 1975, a population of about 220,000,000 can be expected to nearly double its per capita consumption of these products--a total of about ten million tons a year--more than two and a half times the present production of the pulp and paper industry (18).

In Georgia, the pulp and paper industry has been doubling its production about every seven years (19). This rate of increase can be

expected to continue in the future. The fact that Georgia, more so than any other state in the nation, has the potential resources which the pulp and paper industry needs for its future is particularly important.

Georgia now has an economy which is expanding at a rate which makes possible, and increasingly necessary, the full utilization of its natural resources. The pulp and paper industry can play a major role in Georgia's future agricultural, forestry and industrial economy. The industry presents the state with many problems and opportunities, its dual role as a major user of rural land as well as a basic industry has many effects upon the local areas of the state. The following chapters discuss the relationships of the pulp and paper industry to these areas and communities of the State of Georgia.

## CHAPTER II

### THE ROLE OF THE PULP AND PAPER INDUSTRY IN GEORGIA

Growth in the pulp and paper industry into a major segment of Georgia's economy both followed and coincided with a number of changes which have taken place in the state. Mainly, these changes have been in the use and production of rural land and in the state's population patterns. These changes have direct relationships to the activity of the pulp and paper industry in Georgia.

When the pulp and paper industry arrived in Georgia in 1936, many of the changes in the state's economy had been underway for some time. Since the second World War, during the period in which the industry has experienced most of its growth, the pattern of basic change in Georgia's economy has continued.

Dependence upon a one-crop agricultural system formed a background from which many of the changes have taken place. In 1915, as the boll weevil was destroying the concept of one-crop farming, it also created a major and continuing decline in agriculture as a source of employment. Since the time of the boll weevil and the depression of the early 1930's, diversification, improvement and mechanization of agricultural methods have all resulted in continuing declines in agricultural employment in Georgia.

As recently as 1940, some forty per cent of the state's total employment was in agriculture. In 1960, agricultural employment accounted for only about nine per cent of total employment (20).

As agriculture dropped from its position as the main source of employment in the state, the lack of suitable employment opportunity in many of Georgia's rural areas resulted in unemployment, or under-employment for large portions of the work force. Often these people have been forced to seek employment in the urban areas of the state. The result of this search for employment has been a migration of farm workers and their families to urban and industrial centers.

As the pulp and paper industry has become an increasingly important segment of the state's economy, its relationship to the state's rural economy becomes of particular importance. The industry is directly dependent upon timber production and availability of labor in rural areas for its continued growth. At the same time, many rural areas have become more dependent upon the pulp and paper industry as a major factor in their economy.

#### Georgia's Changing Economy and Population

Historically, Georgia's rural economy has been based upon the use and productivity of the land. Although many changes have occurred over a long period, since 1940 the state has experienced a drastic shift toward an industrial and urban type of economy. From 1940 to 1960, nonagricultural employment in the state more than doubled from about 475,000 to 1,034,500 (21). This gain has come mainly in service, trade, government and manufacturing. Manufacturing employment in Georgia increased from about 180,000 in 1940 to nearly 340,000 in 1960 (22).

Unfortunately for many sections of the state, most of these gains have occurred in the more urban centers. During the period of Georgia's greatest industrial growth, many counties have actually experienced



losses in manufacturing as a source of employment. The map on page 17 illustrates these counties and also those whose gains in manufacturing employment were below the state average from 1947 to 1958.

As economic shifts have altered former patterns of employment in Georgia, the state's population has gradually become urban in nature. The following table illustrates the changes which have taken place during the past twenty years in the state's urban, farm and rural non-farm population.

Table 2. Changes in Georgia's Population

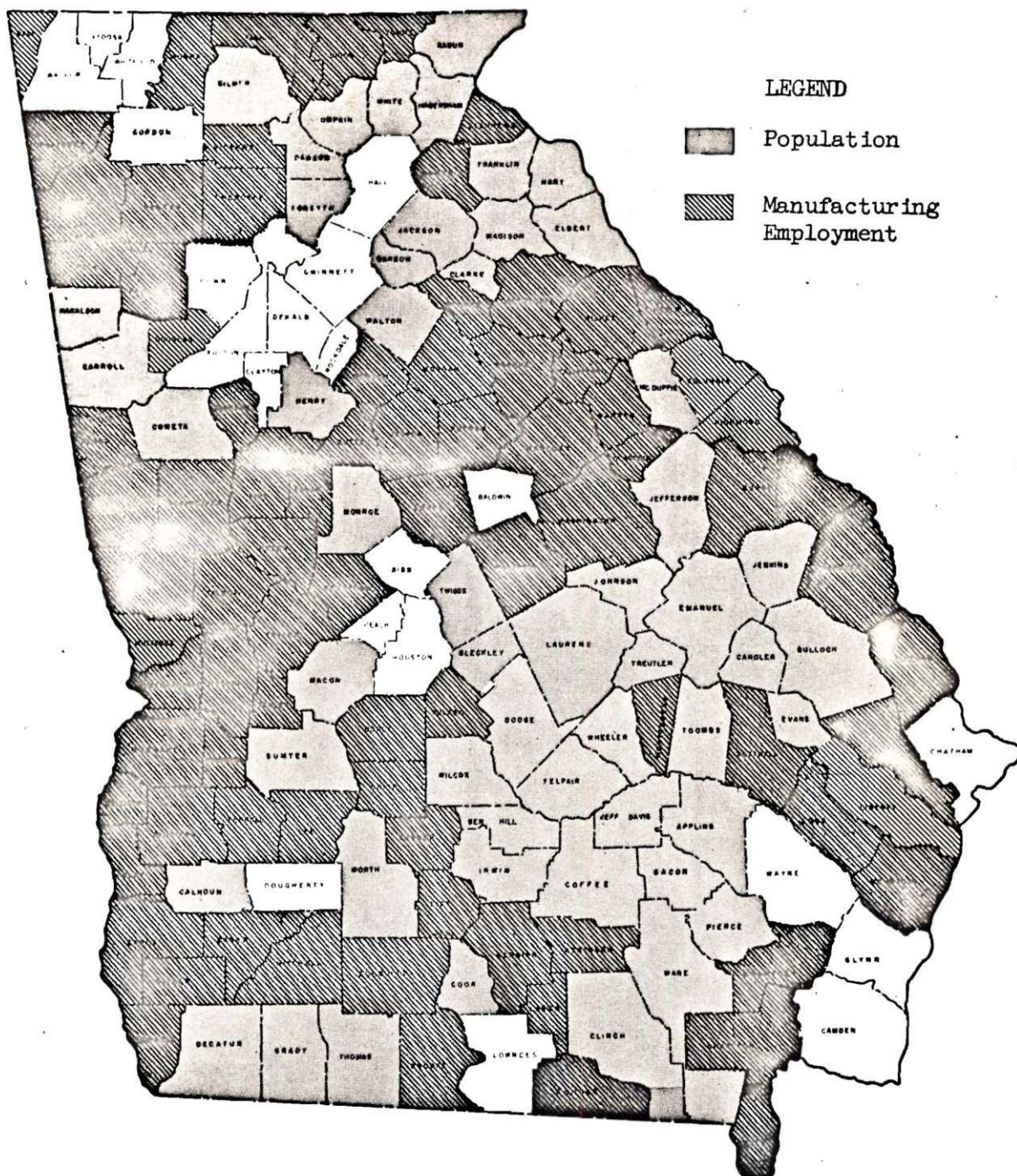
	Urban	Farm	Rural Non-Farm	Total
1940	1,073,808 (34.4%)	1,363,966 (43.7%)	685,949 (21.9%)	3,123,723
1950	1,559,447 (45.2%)	962,435 (28.0%)	922,696 (26.8%)	3,444,578
1960	2,180,236 (55.3%)	440,277 (11.2%)*	1,322,603 (33.5%)*	3,943,116

Source - U. S. Census of Population

\* Estimate, 1960 Census Includes only rural and urban categories.

Some of these population changes, along with changes in employment patterns serve to illustrate some of the areas of the state where economic problems are most pressing. The map on page 17 also illustrates a number of "below average" counties from the point of losses in population or of gains less than the state average from 1940 to 1960. These counties, in most instances coincide with those which were "below average" in gains in manufacturing employment.

The relationship of all rural counties in Georgia, particularly the "below average" counties, to the pulp and paper industry is important.



Sources: U. S. Department of Commerce, Bureau of the Census.  
Census of Population 1959: Georgia.

\_\_\_\_\_, Census of Manufacturing 1958: Georgia.

Figure 2. Georgia's "Below Average Counties."

The industry, while active throughout the state, has become a major segment of the economy of many of these counties. The extent of the pulp and paper industry's growth in Georgia's rural areas is presented in the following sections which deal with the changes in the use of the state's rural land during the past twenty-five years.

### Georgia's Rural Land

Changes in land use patterns in Georgia have been equally drastic as those in the state's economy and population. To completely define these changes in the use of Georgia's rural land is hardly possible. However, in broad terms several categories can be used in classifying the uses and ownership of land in Georgia. These categories and allocations of land were derived from Census of Agriculture data and from the 1953 Forest Survey by the U. S. Forest Service (23). The 1953 Forest Survey data have been projected to 1958 in order to make them comparable with available agricultural census data. The following tabulation illustrates the general composition of land in Georgia.

Table 3. Composition of Land in Georgia

FARMS	19.7 million acres	52.8%
PUBLIC LAND	1.8 million acres	4.8%
FOREST INDUSTRIES	4.2 million acres	11.2%
URBAN AND HIGHWAYS	1.8 million acres	4.8%
PRIVATE NON-FARM	9.8 million acres	26.4%
TOTAL	37.3 million acres	100.0%

Of the 37.3 million acres of land in Georgia, more than 26 million acres are woodland. These 26 million acres represent more than 70 per cent of all land in the state. The following table presents the general use of land in Georgia.

Table 4. Land Use in Georgia

WOODLAND	26.1 million acres	70.2%
CROPLAND HARVESTED	4.9 million acres	13.3%
CROPLAND NOT HARVESTED	1.2 million acres	3.4%
PASTURELAND	2.7 million acres	7.5%
HOMES AND FARM LOTS	.6 million acres	.6%
URBAN AND HIGHWAYS	1.8 million acres	4.8%
TOTAL	37.3 million acres	100.0%

The following sections present Georgia's land uses by classes of ownership and illustrate some of the basic changes which have taken place and the relationships of these lands to the pulp and paper industry.

#### Farmland

From 1935 to 1959, total farmland in Georgia dropped from 25.3 million acres, nearly two-thirds of the total state acreage to the present 19.7 million acres, a loss of 5.6 million acres. During the same period, the number of farms in the state dropped from 250, 544 to 106,357. Also, in the period from 1935 to 1959, cropland harvested on farms declined from 8.5 million acres to 4.9 million acres, a drop

of 3.5 million acres. During the same period, pastureland on farms in the state increased from 1.8 million acres to 2.7 million acres due mainly to increasing diversification of former crop-raising farms.

During the same 1935 to 1959 period, woodland on farms showed a marked increase. This woodland increased from 4.4 million acres to 10.2 million acres, an increase of nearly six million acres.

The 106,357 farms in Georgia averaged about 185 acres each in 1959, some three-fourths of these farms were below the average in size, while only about seven per cent were larger than 500 acres. In economic terms, more than three-fourths of the farms in Georgia are operated on a part time basis; nearly 80 per cent of Georgia's farms have yearly sales of less than \$2,500. The average sales for each farm in 1959 was about \$1.600 (24).

Georgia's 10.2 million acres of farm woodland represent nearly 40 per cent of the state's woodland. In terms of productivity, this woodland produces only about eight per cent of the annual harvest of pulpwood in Georgia. About the same ratio is present for sawtimber also. There are several reasons for this lack of productivity of farm woodlands.

First, some of this farm woodland is abandoned cropland which has reverted to woodland and much of its stock of timber is relatively immature. Also, as this land reverted to woodland, its natural restocking included a number of species for which there is little economic use. These species compete for space with those which have value and in many instances make it impossible for saleable trees to become established. These undesirable species include mainly gum and oak species which

because of slow growth and other characteristics are of little value.

On older farm woodlands, undesirable species are also common. This is due to the fact that, in the past as pine sawtimber was removed, most of the hardwood was left and its subsequent growth prevented the natural reseeding of pines, which need direct sunlight to become established. Although vigorous seeding and planting programs have been developed and undertaken by national, state, local and industrial forestry organizations, most of the success of these programs has been confined to large timber tracts rather than the farm woodland which averages less than 100 acres in size.

In sum, the farm woodland in Georgia is only about half stocked with saleable species (25). The U. S. Forest Service rates nearly two-thirds of the recently cut farm woodlands in the southeast in medium or lower degrees of productivity (26).

#### Public Land

Some 1.8 million acres of land in Georgia are in public ownership. The U. S. Government owns 1.5 million acres with the rest in state and local hands. This land is practically all in use as timberland. In addition, this public land has important recreation, wildlife and resource conservation uses. In the instance of the National Forest land in the state (about 0.7 million acres) a comprehensive multiple-use program has been established for its management. This program has important implications to the use and productivity of woodlands in general. This program and its relationship to Georgia's other forest land are discussed in the final chapter of this study.



The productivity and stocking of public land are in direct contrast with that of farm woodland. Most public land in Georgia has been under intensive forest management for some time and generally timber stocks are maximum for the productive capacity of the land. While this land represents only about 4.8 per cent of the state's woodland, it contains more than 15 per cent of the total volume of live sawtimber and growing stock in the state. Productivity of recently cut public woodland is such that the U. S. Forest service rates 90 per cent of this land in the upper range of productivity. In the case of National Forest land, some 95 per cent is in this category (27).

Since most public woodlands are managed primarily for the production of large sawtimber, only a small amount of pulpwood is produced by these forests. Increased utilization of tops and limbs too small for sawtimber by local sawmill operators who bid for and cut most timber from public land indicate that pulpwood production on these lands will increase somewhat in the future.

#### Forest Industry Land

Forest industries in Georgia own 4.2 million acres of land. Of this total, the pulp and paper industry owns or leases about 3.5 million acres. This pulp and paper industry land represents an increase of about 2.8 million acres since 1945. Of the .7 million acres of land owned by other forest industries, the majority is owned by the lumber industry. Actually, the figures for land ownership of both the lumber industry and the total forest industry are larger. This is due to the common practice in the past of a sawmill operator buying land along with the timber upon it and placing his name on a personal deed, rather than

the company's. On the basis of sample data gathered in Greene County, it would seem that the total for all land in forest industry ownership in Georgia would be at least a million acres above the 4.2 million acre total listed. This point is established in view of the fact that a major portion of the land now owned or leased by the pulp and paper industry was formerly owned by the lumber industry. This situation is discussed in following sections of this chapter.

Although no figures are available as to the volume of timber on forest industry land, it would seem that this 11.2 per cent of the state's forest land, if stocked comparably with public land under the same type of management, would represent as much as a third of all the timber in Georgia. Due to such factors as immature stands and former overcutting of timber on these lands, this estimate is probably somewhat high.

Productivity of recently cut forest industry land, like that of public land is relatively high. In the Southeast, 88 per cent of all forest industry land is rated in the upper range of productivity by the U. S. Forest Service. Using the same rating, 99 per cent of the pulp and paper industry land is in this upper range of productivity (28). The pulp and paper industry land, which represents only 13.4 per cent of the 26.1 million acres of woodland in the state, produces more than a third of all pulpwood harvested in Georgia (29).

#### Private Non-Farm Land

The private non-farm land in Georgia, a residual, or "catch all" category, contains 9.8 million acres. This category also contains over



a fourth of all the land in the state and nearly forty per cent of the state's woodland. Since 1950, land in this category increased by 7.6 million acres--from 2.2 million acres to the present 9.8 million acres. This increase is due mainly to the widespread abandonment of farming since 1950. Much of the land was formerly listed in agricultural censuses as farmland.

For the most part, the private non-farm land in Georgia is woodland or reverting to woodland. This land is all classed as commercial forest or potential commercial forest by the U. S. Forest service (30). It contains a large portion of the state's productive timber land, some of it in tracts of over 100,000 acres. On another hand, the private non-farm land in Georgia contains a large portion of the state's rural non-farm population, some 1.3 million persons. To most of these people, timber growing is only an incidental activity if it is practiced at all.

Stocking and productivity of this land are comparable with that of the farm woodland in the state. Much of the land is former cropland which has reverted to forest over a long period of time. Like farm woodland, only about half of the timber stock is of species which have economic value.

Productivity of recently cut woodland in this category is generally low with over 50 per cent rated in medium and lower ranges of productivity by the U. S. Forest Service (31).

Based upon 1953 data of the Forest Service, the median size of private non-farm holdings in the state was about 96 acres (32). While this study included all the land in the category, it did not include the number of ownerships under three acres so this median is not accurate.

Another average, based upon an estimated 380,000 rural non-farm households in the state, is about 23 acres. This average does not take into account the fact that there are many tracts of private non-farm land which are not used as residential sites so it is also inaccurate.

While both of the above averages are extreme, they do establish a range within which most of the private non-farm ownerships fall. This range is used in the following discussion of the economics and future outlook for forest production in Georgia.

### Georgia's Forests and the Future

Forestry in Georgia has undergone a basic shift in the past few years. Much of the state's large sawtimber was removed during the building boom which followed World War II. Lumbering became increasingly unfeasible in the face of competition from virgin timber areas of the Northwest. As a consequence of this competition, coupled with the shortage of large sawtimber, employment in the lumber industry dropped by about 12,000 (40 per cent) from 1947 to 1958 (33).

As sawtimber volumes and lumbering dropped, the pulp and paper industry increased its activity in the state. Employment in forestry for pulpwood harvesting and shipping increased to nearly 17,000 workers, more than replacing the 12,000 worker drop in lumbering.

As the pulp and paper industry grew, it became a significant owner of forest land in Georgia. The pulp and paper industry increased its land holdings until it had under its control more than 3.5 million acres of land, 13.4 per cent of all the forest land in Georgia. As mentioned previously, this land, along with that under other forest industry ownership, may contain as much as a third of all the timber in Georgia.

When timber areas in the Northwest become depleted of their virgin timber and revert to a second-growth situation common in other areas, lumbering in the South, and in Georgia, will again become feasible. The South has a climate which makes possible rapid growth and convenient harvesting of all forest products. These factors will be major ones in future competition with other areas for forest production.

The re-growth of the lumber industry, as well as the continued growth of the pulp and paper industry, will depend to a large extent upon better utilization of the state's forest resources. With demands for pulpwood expected to more than double in the next fifteen years, and with Georgia's forest industry and public forests already approaching maximum production, the solution must lie in increasing production of the state's farm and other private forests.

These woodlands, a total of 20 million acres, represent some 77 per cent of the state's 26.1 million acres of woodland. In general they are poorly stocked and are rated by the U. S. Forest Service in lower categories of productivity. Added to this situation, the fact that about 98 per cent of this woodland is in stands of less than 100 acres makes improvement of production very difficult.

The economics of timber growing are such that on small tracts the ultimate gains are relatively unimportant to many landowners. A mature, and well-stocked acre of timberland can return from \$7.00 to \$12.00 annually. However, in the case of most farm and private non-farm land in Georgia, under present stocking and production, the most common return is about \$3.00 per acre.

With costs of re-stocking an acre of land with small pines in the range of \$15.00 to \$25.00 an acre, and the twenty-odd years required for this land to reach high levels of productivity, most rural residents take little interest in timber growing.

The solution to Georgia's future timber production problem is important to both the state's rural economy and to its very important forest industries as well. This solution is being sought diligently by federal, state, and local agencies, the forest industries themselves, and by private citizens. All of these agencies and people are aware of the potential and necessary role of forestry in the future of national, state and local economies.

#### Pulp and Paper Industry Land Policies

The history of the pulp and paper industry is one which has made it particularly aware of the limits of forest production. Limited supplies of pulpwood in the East and in the North had made it necessary for the industry to come south during the 1930's. It seemed at that time that the timber resources of the South would be ample for any foreseeable growth of the industry. By the end of the second world war, however, rapid increases in consumption of pulp and paper products had changed this outlook completely. At the same time, uncertainty over the productivity of farm and other private lands, in the face of rapidly changing economic conditions, made it advantageous for the industry to develop some measure of control over its pulpwood supply.

The outgrowth of these situations was the development of company owned forests. This was an idea new neither to the pulp and paper industry in other areas nor to the coastal areas of Georgia where large

tracts of land had been under lumber and turpentine industry ownership for many years.

#### Company Owned Forests

From 1936 to 1945, the pulp and paper industry bought or leased some 680,000 acres of woodland (34). All of this land was located in 25 southeast Georgia Counties. Of this total, 80 per cent was located in 9 coastal area counties\* near the state's first pulp and paper mills in Chatham, Glynn and Camden Counties. By 1957, the pulp and paper industry owned or leased some 3.3 million acres. This land was located in all but 11 of the 158 counties\*\* in Georgia. Of these 11 counties, all but Clayton, DeKalb and Gwinnett which are highly urbanized, are located in a highly agricultural area of south Georgia. The map on page 29 illustrates the distribution and pattern of land owned or leased by the pulp and paper industry in Georgia in 1957.

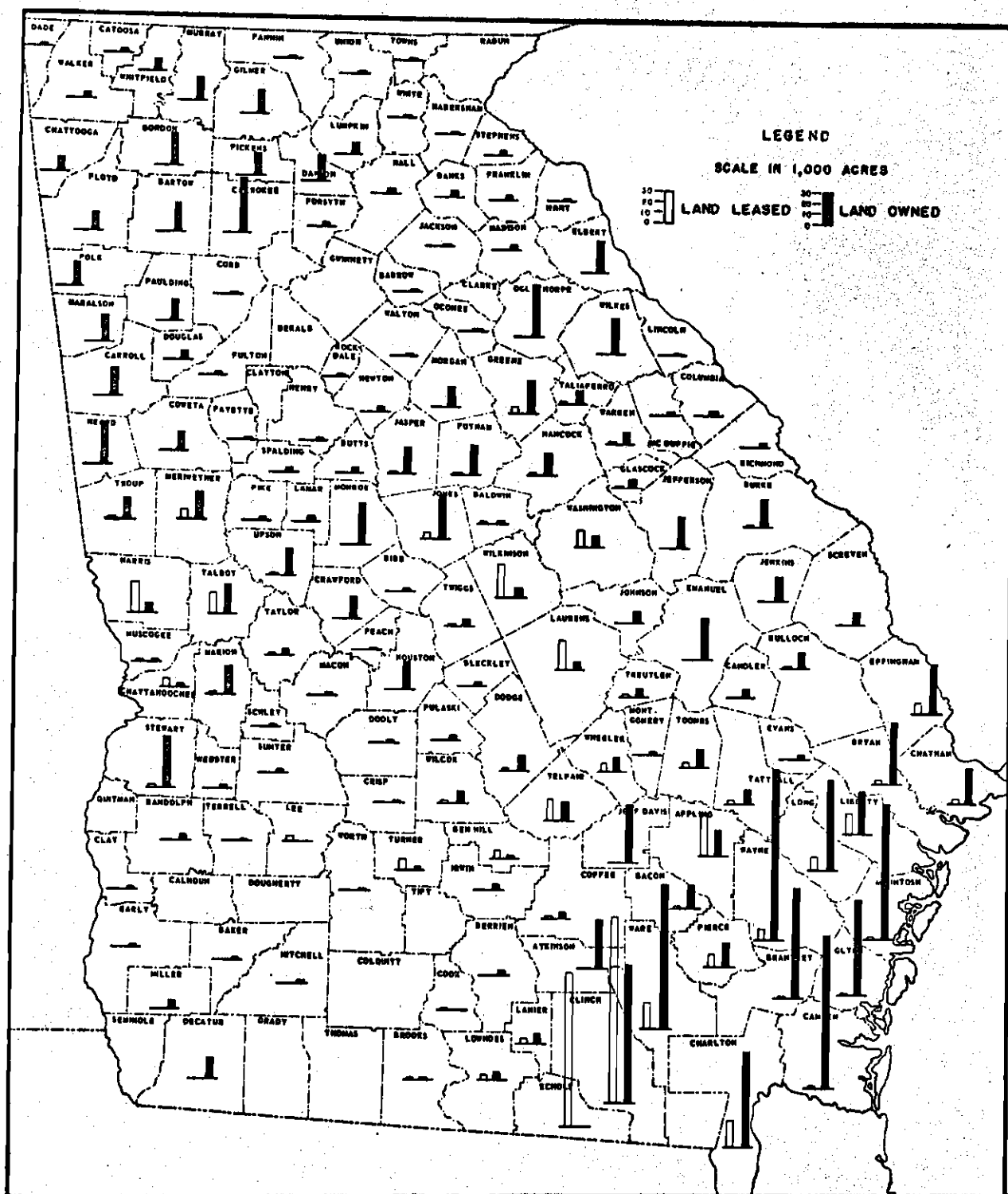
Although the amount of land owned or leased by the pulp and paper industry in the 9 coastal area counties nearly tripled from 1945 to 1957, only 38 per cent of the pulp and paper industry land in Georgia in 1957 was in these 9 counties.

The 3.3 million acres of land owned or leased by the pulp and paper industry in Georgia in 1957 were in 381 tracts ranging in size from less than 100 acres to more than 70,000 acres (35). More than 75 per cent of the industry's holdings were in tracts of over 10,000 acres.

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\*Camden, Clinch, Charlton, Glynn, Long, Liberty, McIntosh, Ware and Wayne.

\*\*Calhoun, Clayton, Colquitt, Dougherty, DeKalb, Grady, Gwinnett, Quitman, Seminole, Thomas and Tift.



Source: Emory University School of Business Administration.

Figure 3. Land Owned and Leased by the Pulp and Paper Industry in Georgia, 1957.

The average size of pulp and paper industry holdings in 1957 was about 850 acres.

In many instances, the pattern of land acquisition by the pulp and paper industry coincides closely with the pattern of the state's "below average" counties as shown by the map on page 17.

These counties, 106 in all, contained two-thirds of all pulp and paper industry land in the state. Of these 106 counties, 13\* contained a total of only 1,891 acres of pulp and paper industry land. With the exception of 2 counties (Fannin and Towns, which are largely in public ownership), the counties are highly agricultural in nature. The remaining 93 counties contain more than 80 per cent of the 2.6 million acre increase in pulp and paper industry holdings in Georgia from 1945 to 1957.

The pulp and paper industry took advantage of the generally lower land prices in these "below average" counties to add to its holdings in the years between 1945 and 1957. Since 1957 the industry has acquired only about 230,000 acres of land in Georgia. This is due, in part, to a shortage of well-stocked timber land for sale in the state. This shortage, coupled with rapidly increased values of rural land throughout the state, has largely curtailed land acquisition by the pulp and paper industry in recent years. The following table illustrates the rising trend of rural land values in Georgia.

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\*Baker, Calhoun, Cook, Crisp, Early, Fannin, Grady, Jackson, Mitchell, Schley, Seminole, Tift and Towns.

Table 5. Rural Land Values in Georgia

YEAR	AVERAGE VALUE PER ACRE
1940	\$20.28
1945	\$27.63
1950	\$43.25
1954	\$61.46
1959	\$100.57

Timber production on well stocked woodland in Georgia can return from \$6.00 to \$8.00 an acre to an owner if he sells his timber as stumpage. This return is within the range of from \$3.00 to \$12.00 previously discussed and is probably a good average for timber lands in the medium to higher categories of productivity with some degree of forest management. Costs of forest management, fire protection and taxes for such land average about \$2.00 a year per acre. On the basis of these figures, a net annual return of from \$4.00 to \$6.00 an acre can be realized. On the assumption that a ten per cent return is an attractive investment in view of fire and insect risks present in timber growing, a range of from \$40.00 to \$60.00 an acre can be established as feasible for the purchase of well-stocked, productive timber land. The validity of this range is borne out by studies in forest management and investment (36). It is further borne out by the fact that in 1956, the year when the pulp and paper industry began reducing its purchases of land in Georgia, the average price paid for land by the industry had risen to \$49.62 an acre (37).

Since the average value of rural land in the state has risen above the point where the purchase of land for timber growing is economically feasible, coupled with the generally poor stocking and



productivity of farm and other private woodlands, the pulp and paper industry has been forced to curtail most of its land acquisition in Georgia.

#### Relationship to Agricultural Land

As the map on page 29 would suggest, the pulp and paper industry has bought very little land in the highly agricultural counties of Georgia. In 60 counties, all of which have relatively high levels of agricultural employment, the pulp and paper industry owned or leased only 287,631 acres of land in 1957. This total represented only about 9 per cent of the industry's land holdings in the state at that time.

Pulp and paper industry figures show that of the 3.5 million acres of land owned or leased by the industry, only about 2.5 per cent, some 70,000 acres, was used for agricultural purposes at the time of purchase (39).

As the nature of its operation would suggest, the pulp and paper industry was interested only in buying productive timber land. This would seem to preclude its buying any cropland or pasture land. However, it is a commonly held opinion in the state that the pulp and paper industry has taken a large amount of farmland out of production. This opinion is hardly realistic in view of the high price of rural land in general and the fact that most farm woodland is poorly stocked and unproductive. In the case of cropland or pasture land, the \$15.00 to \$25.00 an acre for initial stocking with seedlings, plus an annual expense over some 25 years of about \$2.00 an acre, would represent a total investment of from \$65.00 to \$75.00 an acre. At the end of the 25 year period, the land would have produced from 20 to 30 cords of

wood, worth a total of from \$60.00 to \$150.00 within current fluctuations of stumpage prices for pulpwood. An average volume of 25 cords of wood can be assumed to have an average value of \$105.00 over the 25 year period.

The above figures do not include any land costs, so when the present average value of about \$100.00 an acre is added to the \$65.00 to \$75.00 in stocking and management, obviously the conversion of cropland or pasture land becomes a poor means of coming by \$105.00 worth of pulpwood.

Another point in regard to the pulp and paper industry's buying farm and non-farm woodland is the fact that about 98 per cent of these woodlands are in stands of less than 100 acres. Of the 381 tracts of land owned or leased by the pulp and paper industry in 1957, only 13 were less than 100 acres (40).

#### Effects of the Pulp and Paper Industry on Local Areas of Georgia

In some areas of the state, the arrival of the pulp and paper industry as a user and owner of rural land has had relatively little effect upon the local economy. In general, these areas are those where most of the land now owned or leased by the pulp and paper industry has been under forest industry ownership for many years. The counties in southeast Georgia's coastal plain, most of which have never had an agricultural type of economy, are in this category. In these counties the transition of land ownership to the pulp and paper industry has had the effect of shifting employment from the declining lumber and turpentine industries to the growing pulp and paper industry.

Counties in the coastal plains which have been selected as sites

for paper mills have experienced remarkable advances in economic activity. A particular example is Camden County in extreme southeast Georgia. Historically, Camden County had little manufacturing activity other than its lumber and turpentine industries until the establishment of St. Mary's Kraft Corporation in St. Mary's in 1941. By 1958, Camden County was one of only two counties (the other was Cobb County) having manufacturing wages in excess of the national average (41). Primarily because of the St. Mary's plant, Camden County leads the state in pulpwood production with some 143,000 cords of pulpwood valued at about \$2,300,000 produced in 1959 (42). This production represents full-time work for nearly 600 people, about equal to employment at the St. Mary's Kraft plant itself.

In contrast, many counties in Georgia--such as those in the Rome and Macon areas--have had a diverse economy and a variety of employment sources for many years. These sources of employment took up much of the slack created by declines in agriculture and lumbering. In counties such as these, the manufacturing activity of the pulp and paper industry has contributed to a continuing diversity of employment while the industry's forest activity has taken up some of the slack in agriculture and lumbering.

Another example of the effects of the pulp and paper industry's activity is felt in the many counties of Georgia which have been almost completely dependent upon agriculture in the past. As agricultural employment dropped, economic activity also declined. The loss of population which followed these declines has often been drastic. One typical county in this category is Jasper, in north-central Georgia. It has experienced a decline of nearly a third of its population in the

past 20 years. South of Jasper, both Jones and Twiggs County have had similar experiences in their rural areas. Like Jasper, both are faced with extensive rehabilitation if they are to regain a place of importance in the state's economic structure.

The pulp and paper industry has been particularly active in counties such as these and in many has assumed a dominant position in the local economy. The role of the pulp and paper industry in these areas, if they are to regain a position of importance in Georgia, will be an important one.

Counties in Georgia which are most typical in their relationship to the pulp and paper industry are those that have experienced only slight gains, or declines in manufacturing, agriculture and population but which retain many of their previous economic characteristics. In such counties, the ownership and production of forest land is becoming an increasingly important factor. The pulp and paper industry has been active in most of these typical counties and will play a major role in their future economic development.

The following chapter discusses in detail the relationships and effects of the pulp and paper industry in one of these typical counties.

### CHAPTER III

#### THE ROLE OF THE PULP AND PAPER INDUSTRY IN GREENE COUNTY

Greene County is located in north-central Georgia. Its county seat, Greensboro, is midway between Atlanta and Augusta. Predominately rural, Greene County contains about 258,000 acres of land and has a population of about 11,000 people. The county is located in Georgia's piedmont section, an area of rocky and red clay soils. The piedmont region was formerly devoted mainly to the production of cotton. However, since about 1920 both acreage devoted to and production of cotton have dropped drastically. In Greene County, as elsewhere in the piedmont, there has been a widespread abandonment of crop farming with most of the open land now devoted to pasture for livestock or to feed crops.

Greene County has long been regarded as a "problem area." In 1933 it was one of a number of counties in the South which shared such a high degree of economic depression as to gain national recognition. Subsequently, a number of federal and state programs designed to rehabilitate the economy were carried out. These programs, mainly in agriculture, soil conservation and forestry have been successful and, as a result, Greene County is no longer considered such a "problem area."

In view of the fact that there is a relatively large amount of public and forest industry land in the county, Greene County is well-suited for a study of the relationships of the pulp and paper industry to the development problems of a typical local area of Georgia.

### Greene County's Economy and Population

As in other areas, the pulp and paper industry arrived in Greene County upon a scene of economic change which had been underway for many years. Greene County had long been dependent upon agriculture as the main source of employment. Manufacturing activity in the county was centered mainly around textiles and lumbering. The lumber industry was active as a significant owner and user of land as well as being the county's largest manufacturing activity.

When the pulp and paper industry first became active as a major landowner in Greene County (around 1950), both agriculture and lumbering had been in a period of decline. These declines had an effect upon economic patterns and upon population in the county.

The most drastic change which has taken place in Greene County is in agricultural employment. In 1940, agricultural employment made up nearly half of the employed labor force in the county. By 1960 this had dropped to less than a fifth of total employment in the county, a loss of nearly 1,500 jobs out of some 4,800 jobs in the county (43). This drop in agricultural employment is similar to that experienced in many of Georgia's rural counties and has been followed by a general decline in economic activity in the towns which have depended upon sales to farmers as a source of income.

As agricultural employment was declining in Greene County, so was manufacturing. From 1947 to 1958, employment in manufacturing in the county dropped by some 354 jobs to a 1958 total of 1,116 jobs. While payrolls in manufacturing remained at about \$2,400,000 during the period, the value added to raw products by their manufacture dropped

from \$5,311,000 in 1947 to \$3,175,000 in 1958. During the same period, the number of manufacturing establishments in Greene County dropped from 35 to 30. Of the 30 manufacturing establishments in Greene County in 1958, 19 were in lumbering, a drop of 12 establishments from a high of 31 in 1954 (44).

As agriculture and manufacturing declined in Greene County, retail sales increased somewhat. These sales increased from \$5,359,000 in 1948 to \$6,867,000 in 1958. However, when the 1958 sales are corrected for inflation since 1948, the sales total represents only about \$5,400,000, nearly the same as the 1948 figure. By comparison, corrected figures for the state as a whole show an increase in retail sales of nearly ten per cent for the same period (45).

As in practically all Georgia counties which are not part of a metropolitan area, Greene County has experienced losses in population. Over the 20 year period from 1940 to 1960, population in the county dropped about one per cent annually, a total loss of 2,516 persons. Greene County's 1960 population was 11,193.

The following table illustrates the characteristics and changes in Greene County's population since 1940.

Table 6. Changes in Greene County's Population

	Urban (all towns)	Farm	Rural-Non-Farm	Total
1940	5,373 (39.3%)	8,144 (59.4%)	192 ( 1.4%)	13,709
1950	5,663 (44.0%)	4,900 (38.2%)	2,290 (17.8%)	12,843
1960	5,459 (48.8%)	2,176 (19.4%)*	3,558 (31.8%)	11,193

Source - U. S. Census of Population

\*Estimate, 1960 Census includes only rural and urban categories.

Greene County's urban population, which by definition used by the U. S. Census Bureau, includes only those people living in towns of 2,500 or more would be comprised of only those people living in Greensboro itself. By grouping the Greensboro total with those of the other towns in the county, a more realistic urban population is gained. This compilation indicates that Greene County's rural population (those not living in any town), dropped from 8,336 people in 1940 to 5,734 in 1960, a loss of 2,602 persons. The loss of this category is comparable to the total loss for the county of 2,516 persons.

As the rural population of Greene County has dropped, its character has changed also. In 1940, the rural non-farm population of the county represented less than 1.5 per cent of the total. At the same time, the county's farm population represented nearly 60 per cent of the total. By 1960, the farm population represented less than 20 per cent of the county total while the rural non-farm population represented nearly a third of Greene County's total population.

Greene County's population decline has been accompanied by a shortage of jobs to replace losses in agriculture and manufacturing. This failure has forced many people to move to the urban-industrial areas of the state or out of the state entirely. Greene County, while not in dire economic condition, is obviously one of Georgia's "below average" counties.

During the periods discussed the pulp and paper industry has assumed an important position in Greene County. At the same time, the role of forestry in general has taken on new importance in the county. The following sections of this chapter deal with the changes



in use of Greene County's rural land and the relationships of this land to the pulp and paper industry in the county.

#### Greene County's Rural Land

Changes in land use patterns in Greene County have been as drastic as those in the economy and population. Using the same terms and sources (see p. 18) as those in the preceding chapter, the general disposition of land in the county can be defined. While the 1953 Forest Survey by the U. S. Forest Service did not include county data, comparable data have been gathered in Greene County itself. These data, in conjunction with those of the current U. S. Census of Agriculture are used to present the uses of land in Greene County. The following table illustrates the general composition of land in Greene County.

Table 7. Composition of Land in Greene County

FARMS	130,000 acres	50.0%
PUBLIC LAND	24,000 acres	10.8%
FOREST INDUSTRIES	45,000 acres	17.5%
URBAN AND HIGHWAYS	13,000 acres	5.1%
PRIVATE NON-FARM	46,000 acres	17.6%
TOTAL	258,000 acres	100.0%

Of the 258,000 acres of land in Greene County, some 216,000 acres is woodland. This woodland represents more than 80 per cent of all the land in the county. The following table presents the general use of land in Greene County.

Table 8 Land Use in Greene County

WOODLAND	216,000 acres	80.3%
CROPLAND HARVESTED	13,100 acres	5.1%
CROPLAND NOT HARVESTED	4,000 acres	1.3%
PASTURELAND	20,900 acres	7.9%
HOMES AND FARM LOTS	900 acres	.3%
URBAN AND HIGHWAYS	13,000 acres	5.1%
TOTAL	258,000 acres	100.0%

The following sub-sections present the uses of land in Greene County by the various classes of ownership and illustrate some of the basic changes which have taken place in the use of these lands and the relationships of these lands to the pulp and paper industry.

#### Farmland

From 1940 to 1959, farmland in Greene County declined from about 164,000 acres, nearly two-thirds of the county, to less than 130,000 acres, a loss of about 34,000 acres. The number of farms in the county dropped from 1,337 to 558 during the same period. In 1940, Greene county had more than 46,000 acres of harvested cropland, in 1959 there were only about 13,000 acres in this category. These declines can be compared further with declines in cotton acreage over a longer period of time. In 1920, when some 57,000 acres were planted to cotton, the county's farms contained nearly 200,000 acres of land. By 1930, cotton acreage had dropped to around 16,500 acres; in 1959, there were

only about 1,600 acres of cotton grown in Greene County. As mentioned previously, most cropland in the county is devoted to feed crops for livestock. Over 70 per cent of the 13,100 acres of harvested cropland in Greene County in 1959 were devoted to feed crops for livestock. Over 70 per cent of the 13,100 acres of harvested cropland in Greene County in 1959 were devoted to corn, small grains, hay, and silage crops.

While total farm acreage in Greene County dropped, woodland on farms increased. In 1940, there were about 60,000 acres of farm woodland in the county. By 1959, there were nearly 82,000 acres in this category. Farm woodland in Greene County represents nearly two-thirds of all the farm land, and more than a third of all the woodland in the county.

Greene County's farm woodlands produced 18 per cent of the 41,500 cords of pulpwood harvested in the county in 1959. This is somewhat higher than the 8 per cent ratio for the state as a whole but still far below potential production of the county's farm forests.

Sales of sawtimber by Greene County farms in 1959 were about \$110,000. By comparison, the public land in the county which represents only about a third as much acreage as the farm woodlands, had sales of about \$100,000 (46). Only about 15 per cent of Greene County's farms reported any sales of sawtimber.

On the basis of these indications of productivity and upon local observations and opinions it would seem that the farm woodlands of Greene County, while slightly more productive than the state average, are far below potential for timber production. Local foresters

estimate an average annual return to owners of Greene County farm and private non-farm woodlands to be about \$2.00 an acre.

Stocking of Greene County's farm woodland is comparable with that of the state's farm woodlands in general. Undesirable species, particularly gum, are common and, on lands which have reverted to woodland, gum stands often predominate. In many more mature areas, most of the pines have been removed as sawtimber or pulpwood, leaving hardwood which has prevented the re-seeding and growth of young pines.

#### Public Land

Land in public ownership represents nearly 24,000 acres, about 11 per cent of the 216,000 acres of woodland in the county. This land is part of the Oconee National Forest and is under intensive management for timber production as well as for such other uses as recreation and resource conservation.

The U. S. Forest Service, which manages this land, has established a comprehensive and long range multiple use program for the development and use of its forest land. This program is in effect in Greene County and has resulted in improvement of recreation facilities and wildlife habitates. This program has important implications to the use and development of all rural land, and to woodlands particularly. The relationships of the multiple use concept to state and local area development are discussed in the final chapter of this study.

As mentioned previously, sales of timber from the Oconee National Forest in Greene County are about \$100,000 annually. These sales return about \$4.00 an acre each year. In the future, timber sales are expected

to increase by about 50 per cent as the timber stands reach a high level of productivity. Estimates of the annual return from timber sales indicate a range of from \$6.00 to \$8.00 an acre within the next five years. This estimate is based upon sales of more mature trees, coupled with increasing prices for choice sawtimber.

The Oconee National Forest returns 25 per cent of its gross annual sales to Greene County as an in-lieu-of-tax payment. This payment averages about \$25,000 a year and represents more than half of county income from its rural land. This return from the public land in the county averages about \$1.00 an acre annually, by comparison, the rest of Greene County's rural land is assessed at about \$5.00 an acre and returns about \$0.20 an acre annually.

Like most public land, the Oconee National Forest is well stocked with timber and high in general productivity.

#### Forest Industry Land

About 45,000 acres of land in Greene County are in corporate forest industry ownership. This total represents more than 20 per cent of the county's 216,000 acres of woodland. In addition to this total, it is estimated that about another 10,000 acres of land in the county is owned by individuals having an interest in local timber companies.

Historically, timber companies have held large amounts of land in Greene County. As elsewhere, this ownership of land arose because the land was available at a value less than that of the timber upon it. Practically all land in forest industry ownership in Greene County was

assembled in this manner and until declines in lumbering led to extensive sales to the pulp and paper industry, this land and its ownership drew relatively little attention.

Of the 45,000 acres of land in Greene County under corporate forest industry ownership, the pulp and paper industry controls slightly more than 40,000 acres. This total represents an increase of about 35,000 acres from 1950 to 1961. Some 86 per cent of this increase took place before 1957. All of the land owned or leased by the pulp and paper industry in Greene County has been assembled since 1947, when a tract of 763 acres was bought (47).

Land use and ownership by the pulp and paper industry are discussed in a following section of this chapter.

Forest industry land in Greene County is generally well-stocked and is reaching higher levels of productivity as stands mature. Some tracts of this land were badly cut in the past and consequently re-stocking of sawtimber has been poor. Most of the forest industry land in the county is under intensive timber management and in the future practically all of it will reach high levels of stocking and productivity. In general, annual production of an acre of this forest industry land in Greene County is within the range of from \$4.00 to \$6.00. Like the land in public ownership, productivity of forest industry land is expected to increase in the future to a range of from \$6.00 to \$8.00.

#### Private Non-Farm Land

Some 46,000 acres of land in Greene County are in private non-farm use. This total represents over 20 per cent of the 216,000 acres

of woodland in the county. This 46,000 acres represents an increase of an estimated 20,000 acres since 1950 due mainly to abandonment of farming on much of the land.

This land contains much of the county's better timber stands; at the same time much of this private non-farm land is in small residential-type holdings. Based upon Greene County's 5,734 rural non-farm residents, the average size of each holding is about 80 acres. As is the case on a state-wide basis, most of these holdings are too small for timber growing to be economically attractive under present conditions.

In general, the stocking and productivity of the private non-farm lands in Greene County are comparable with that of the county's farm lands. Much of the land is former cropland which has reverted to woodlands which are poorly stocked with species of trees which have value. Also, many of the stands of timber on this land have been over-exploited in the past and have reverted to predominantly hardwood types of growth.

As a consequence of poor stocking, annual returns to owners of Greene County's private non-farm lands are generally low. Local foresters estimate these returns to be less than \$2.00 an acre annually from the average tract. This is below the average for farm woodlands in the county due primarily to a lack of any degree of timber management on much of the private non-farm lands. This lack is caused by a failure of many rural residents to take any interest in timber growing and by the fact that much of the land is in the ownership of people who do not live in Greene County. Nearly 70,000 acres of land in the county are in absentee ownership. For the most part this ownership has come

about through estate settlement among former farm families who have left the county. Generally this absentee-owned land plays only a small part in the productivity of Greene County as a whole.

The productivity situations on the farm and private non-farm lands in Greene County are serious in view of the fact that much of the county's future productivity lies within these categories. As farm and other rural residents move to urban areas these categories grow larger while the owners sever direct concern or connection with the economy of Greene County. These problems are common throughout most of the rural areas of Georgia; their solution becomes increasingly difficult, and at the same time more necessary.

The following sub-section deals with the outlook and economics of forestry and forest production in Greene County.

#### Greene County's Forests and the Future

As forestry in Greene County has shifted from lumbering to a more diversified type of lumber-pulpwood activity, losses in employment in lumbering have been replaced by employment in harvesting pulpwood. The lumber industry had an estimated decline of more than 300 jobs between 1947 and 1958. Employment in harvesting pulpwood alone is estimated to be about 160. This estimate is based upon harvesting of one cord of pulpwood per man-day, 250 working days a year, in relation to the current Greene County total production of about 40,000 cords of pulpwood annually.

In terms of value Greene County's pulpwood crop in 1959 was worth about \$650,000. Of this total, some \$500,000 represents labor and hauling costs. The remaining \$150,000 represents approximate stumpage value.



Greene County's 216,000 acres of woodland have the potential of producing about two cords of pulpwood a year per acre. This potential, if reached, would amount to a total county production of some 432,000 cords of pulpwood. At current prices, this production would be worth about \$7,350,000 and represent some 1,700 full-time jobs.

If all of Greene County's forest land were utilized for growing sawtimber, rather than pulpwood, the value of production and total employment would be comparable to the pulpwood figures.

In all certainty, the forests of Greene County will never reach such levels of productivity and employment. However, it becomes obvious that timber growing (and the jobs that it creates) can be a major asset in the future development of the county. The same relationship to this future development also exists in practically every other rural area of Georgia where forest industries are active.

Several factors combine to limit improvements in timber production in Greene County, as elsewhere. These factors were discussed in the preceding chapter at length.

In general, the limiting factors arise because of the variety of ownerships and small average size of the farm and private non-farm timber stands. In practically all cases, these stands are less than 100 acres in size and are poorly stocked with marketable timber. These conditions, coupled with the relatively high costs of improving stocking and productivity, make it unfeasible for most owners to improve timber production.

The re-growth of the lumber industry in Greene County, as well as the continued growth of the pulp and paper industry, will depend upon

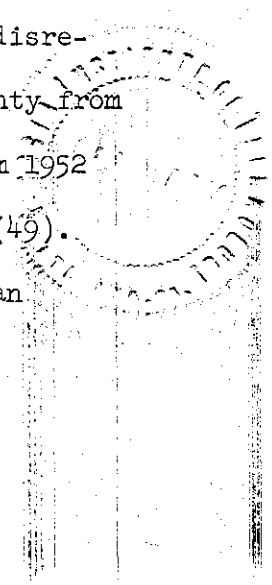
better utilization of the county's woodlands, particularly its farm and private non-farm woodlands. With demands for pulpwood alone expected to more than double in the next 15 years in Georgia, and with most public and forest industry land already approaching maximum production, the importance of improving timber production of farm and other private lands to the future economy of Greene County becomes apparent.

#### Land Use and Ownership by the Pulp and Paper Industry

The first land bought by the pulp and paper industry in Greene County was a tract of 763 acres bought in 1947. The following year a total of 3,778 acres was owned by the pulp and paper industry in the county. By 1950, the industry had a total of 6,111 acres of land in the county. Of this total, nearly 5,000 acres were purchased by the industry. These 11,000 acres were formerly in private ownership, but under corporate control of the Greensboro Lumber Company.

Of the 22,124 acres of land owned by the pulp and paper industry in Greene County in 1951, it is estimated that more than 90 per cent had been in lumber industry ownership or control for some time.

The pulp and paper industry purchased or leased 22,124 acres of land in Greene County in the five year period from 1947 through 1951 (48). When the small initial purchase in 1947 of 763 acres is disregarded, the industry averaged buying or leasing land in the county from 1947 through 1951 at the rate of about 5,600 acres a year. From 1952 through 1961, this average dropped to about 1,800 acres a year (49). The pulp and paper industry now owns or leases slightly more than 40,000 acres of land in Greene County (50).



Most of the recent purchases or leases of land in Greene County by the pulp and paper industry have been from private holdings not classed as farms. In most instances, the land has come from settlement sales of estates or from owners living outside the county. In only three known instances in Greene County has the transfer of land to the pulp and paper industry resulted in displacement of residents. In these three cases, the people were allowed some two years to find new homes. In all three cases, the people concerned were tenants who were using the land for residential purposes only.

As in other areas, the pulp and paper industry took advantage of generally low prices of land in Greene County to add to its holdings. In recent years, the industry has been limited in adding to its holdings in the county. This is due, in part, to a shortage of well-stocked timber land on the market in the county. It is due more so to the rise in values of rural land in the county, particularly since 1954. The following table illustrates the rising trend of land values in Greene County.

Due to the economics of timber growing, which usually preclude an investment of much above an average of \$50.00 an acre for well-stocked timber land, the pulp and paper industry has found relatively little land available in Greene County in the past several years. In 1957, the average price the industry paid for woodland in the county was \$45.46 (51). This can be compared to the \$22.05 which the industry paid for 11,000 acres in 1951 (52).

Table 9. Rural Land Values in Greene County

YEAR	AVERAGE VALUE PER ACRE	PER CENT INCREASE EACH DECADE
1940	\$12.45	...
1945	\$15.38	24
1950	\$36.16	107
1954	\$43.59	21
1959	\$78.58	80
TOTAL INCREASE	\$66.13	530

SOURCE: U. S. Census of Agriculture.

As for the pulp and paper industry's buying or leasing agricultural land in the county for timber growing, such an investment is simply not feasible in the face of high initial stocking costs added to the twenty-odd year period required pine seedlings to reach pulpwood size. This situation, and the economics of timber growing were treated in detail in the preceding chapter. On the basis of statewide data and upon local observations, it would seem that only a negligible amount of agricultural land in Greene County has been removed from productivity by the pulp and paper industry. The total amount of such land can be estimated on the basis of state-wide industry figures. In the case of Greene County, this total would be somewhat less than 1,000 acres, or about equal to a third of the totally idle cropland on farms in the county in 1959.

### Conclusion

The pulp and paper industry arrived in Greene County amid a scene of rapidly changing economic conditions. In the following 15 years, the industry has become an important segment of the county's economy. The pulp and paper industry has become a major source of employment as well as the county's largest landowner.

Greene County, like most of Georgia's rural areas faces the need for a solution to a number of problems if it is to maintain a position of importance in Georgia's growing economy. The extent of future development in Greene County, and in similar areas, lies largely through identifying and better utilizing existing resources and potentials. In areas such as these, the pulp and paper industry shares all the problems which limit future growth and development; likewise the pulp and paper industry shares those opportunities which present themselves to Georgia's rural areas and their communities.

The future of the pulp and paper industry in Georgia will be no better than that of the local areas of the state in which it is active. The following chapter discusses some of the problems and opportunities which the pulp and paper industry shares with the State of Georgia and the state's local areas and communities.

## CHAPTER IV

## FINDINGS AND RECOMMENDATIONS

Over the past twenty-five years, the pulp and paper industry has become a major segment of an industrialized Georgia. The industry is now the third largest manufacturing activity in the state and strong potentials for future growth are present. The pulp and paper industry is rapidly entering new fields of synthetic and chemical manufacturing which will enhance not only its own growth and stability but which also will contribute to the growth of allied industries which are needed as Georgia continues and increases its rate of industrial development.

Areas where the pulp and paper industry has located its plants have experienced marked rises in employment and wages and a subsequent rise in economic activity. In most instances, pulp and paper plants have been located in areas where such economic growth was badly needed. As the pulp and paper industry continues to locate more new plants in inland areas, the effect of its plants on local area economic development will become increasingly important.

In most areas of the state, the role of the pulp and paper industry has been mainly one of forest utilization. Almost all of these areas suffered drastic declines in agricultural and lumbering employment before the pulp and paper industry became active. Employment in the pulp and paper industry has largely replaced previous losses in agriculture and lumbering and has become an important segment in the economy of many areas of Georgia. If these areas can increase the utilization

and productivity of their forests, employment in the pulp and paper industry will be increased greatly and can contribute to future economic growth and stability.

Like agriculture and lumbering, the pulp and paper industry has only an indirect effect upon urban communities. This effect is one of contributing to the urban economy through the patronage of local businesses by the pulp and paper companies and their employees. While the importance of this effect is great, particularly in its potential importance in the future, it does remain indirect. The findings of this study do not suggest any problems of a direct urban nature which are caused by the activity of the pulp and paper industry in most of the local areas of Georgia.

A major finding of this study is that the pulp and paper industry, through its purchases and leasing of rural land, has removed only a negligible amount of agricultural land from production. This finding is counter to generally held opinions in many sections of Georgia where the pulp and paper industry has been blamed for the displacement of agriculture.

These opinions have been so strong and so widely held that in recent years it has been proposed that land acquisition in Georgia by the pulp and paper industry be limited by law. The findings of this study strongly suggest that such limitation would be a serious detriment to economic development of the state as a whole and particularly to the many areas of Georgia where economic development is badly needed.

Land in use by the pulp and paper industry is generally land which is well used. As mentioned before, almost all industry land is

highly productive and well managed. In addition, pulp and paper industry land contributes to soil, water and wildlife conservation through good management and timber stocking. Practically all land in industry control in Georgia is open to the public for recreational use. A significant amount of this industry land has been incorporated into Federal and state wildlife refuges and game management areas.

#### Some Problems, Pulpwood Supply and Rural Land Use

The primary problem which faces the pulp and paper industry in Georgia is that of developing an adequate supply of pulpwood to meet its growing demands. It is clearly indicated that, by 1975, the pulp and paper industry in Georgia will require some 10 million cords of pulpwood a year, nearly two-and-a-half times its present consumption. Assuming average production of one-half cord of pulpwood per acre annually, some 20 million acres of the state's 26 million acres of wooded land could be utilized by the industry by 1975.

Since practically all of the sources from which the industry can control its supply of pulpwood are approaching maximum production the industry faces a monumental task in meeting its future pulpwood needs.

It becomes clear that if the pulp and paper industry is to maintain its rate of growth in Georgia, the state's farm and non-farm woodlands must become more productive in the near future. Since the growth of one of the state's basic industries may become seriously limited by 1975, and since at least 15 years are required to bring poorly stocked land into high production, the problem is one which demands immediate and effective solution.



A parallel to the problem which faces the pulp and paper industry in regard to the farm and non-farm woodlands is the problem which faces the state of Georgia and its local areas in improving the use and productivity of these lands.

In Greene County, for example, it was found that full utilization of the farm and non-farm private woodlands would result in the creation of about two thousand additional jobs in the county. Full utilization of this land on a state-wide basis would result in the creation of some fifty thousand new jobs in pulpwood harvesting and shipping. In nearly every instance, these new jobs would be created in the very areas of the state which suffer most from chronic unemployment.

In addition to this problem another one has arisen as rural areas have become depopulated. Studies made in Greene County show that although large segments of the rural population have moved, the pattern of individual land parcels has remained the same. Because the remaining rural families in Greene County are located throughout the county, the basic pattern of roads and the requirements for school bus service have also remained the same. Although public land holdings and forest industry holdings are large in total, they are comprised of a large number of small individual tracts. Because of these situations, the county government has become heavily burdened in maintaining roads and providing school bus service in many sections of Greene County.

These problems, one improving the use and productivity of farm and non-farm private woodlands, the other, the feasibility of providing services to submarginal economic areas face practically every section of rural Georgia. The solution to these problems is required if rural

areas such as these are to contribute to the future economic growth and stability of many local areas of Georgia.

These problems have arisen in other areas. In Wisconsin, for example, during the late 1920's, many communities were faced with providing services to areas where farming had become unfeasible but which remained in residential use. At the same time, a shortage of timber in the state was forcing drastic reductions in lumbering and in the pulp and paper industry.

A partial solution in Wisconsin was through the use of rural zoning under which exclusive forest districts were created. Regulations in these districts prohibited the establishment of new farms and limited new residential use of land within the forest districts.

At the same time in Wisconsin, efforts were made to relocate families from forest districts to more central locations where they could be adequately served by local governments and where better employment opportunities existed.

It is obvious that similar conditions to those in Wisconsin exist in Georgia today. However, it would seem that any creation of such districts in Georgia would best be directed to comprehensive economic redevelopment of entire local areas as much as to relieving local governments of costly services.

A means of achieving a reduction of service requirements to depopulated or marginal farming areas while at the same time increasing the utilization of the land might be through adaptation of methods similar to the U. S. Forest Service's Multiple Use Program. This program is designed to take into account the various demands to which forest

and rural lands are subject and to balance these demands to feasible management and production. Among the demands which are present are timber growing, water and soil conservation, livestock grazing, wildlife management, hunting and fishing and other recreational and open space uses. The Forest Service maintains roads within its lands and also returns in-lieu-of-tax payments to local governments. In Greene County, the return (by in-lieu-of-tax payments) from the U. S. Forest Service land is some five times greater than that from the county's other rural land. At the same time, this land requires little, if any, servicing by the county itself. The U. S. Forest Service land, as discussed before, has become highly productive for timber and is a major source of employment in the county. Although the Multiple Use Program was conceived primarily for the management of U. S. Forest Service lands it has been studied widely and many of its concepts are being put into practice by agencies and firms who plan and manage the use and production of rural land.

In Georgia, some balance of land use commensurate with the demands placed upon it has been achieved by the State Game and Fish Commission in the operation of its game management areas. In these areas, rights to game management on land in a wide variety of ownership, private as well as public, in addition to land owned by the Fish and Game Commission, have been assembled for the purposes of providing wildlife habitat and public hunting areas. One such area, the Piedmont State Game Management Area in Putnam and Jones Counties, an area of nearly 50 thousand acres, is comprised of state owned land, federally owned forest and soil conservation land, private land and land owned or

leased by several pulp and paper companies. In this game management area, the primary uses of the lands has remained in the control of the individual ownerships, yet for the aims of the Fish and Game Commission the land has been made available for wildlife habitat and public recreational use. In these management areas only such roads as are necessary for the uses of the various ownerships are maintained and this maintenance is a joint operation of the state and the other landowners.

Although Georgia's game management areas are relatively new, they are resulting in a greatly improved recreation and forest resource for the state as a whole. In these areas, it can be seen that through timber sales the public costs of development will be eventually amortized.

High land costs in the state at present constitute a limiting factor in the development and redevelopment of most of the state's rural areas. Land costs are generally about twice that which will justify reasonable return on an investment. It can be assumed that a large portion of this high land cost is a result of speculative inflation. Another factor which bears upon high land costs is that because of extremely low tax rates most owners of rural land can well afford to hold their land for long periods of time without putting the land to productive use.

Raising tax rates to reasonable levels would both provide some incentive to landowners to develop their land and also contribute badly needed funds to hard pressed local governments. While these improvements are both needed, if they could be accompanied by rural land use and zoning programs much of the speculative inflation of

rural land costs which now deter local area development could be reduced.

#### Some Suggested Solutions

The findings of this study suggest solutions to some of the problems which face most rural areas. These solutions are discussed in the remainder of this chapter--they are directed to the following needs.

- . . . . The need for greatly improving the use and productivity of farm and non-farm private woodlands
- . . . . The need for effective and comprehensive multiple use programs for all woodlands
- . . . . The need for comprehensive redevelopment and rehabilitation of many rural areas.

In answering the need for improving the use and productivity of the farm and non-farm private woodlands, several means are recommended. First, Federal aid similar to Acreage Reserve provisions of the Soil Bank Program should be made available to landowners. Availability of such aid would result in the re-forestation of many un-used fields and pastures and in improving the stocking and management of un-productive woodlands. On local levels, it is recommended that this program be administered by the Agricultural Stabilization and Conservation Service as a joint undertaking of county agricultural agents, soil conservation specialists and state foresters with the cooperation of local agricultural and forest industry representatives.

It is also recommended that as re-forestation and stocking efforts are intensified they become more directed to improving the use and

productivity of the largely ignored small forest holdings (under 100 acres) which comprise most of Georgia's woodland.

The success of this program would contribute in large measure to the achievement of balanced multiple-use of woodlands if the programs provided incentives for the landowners to participate in state, regional and local multiple-use programs.

The need for effective and comprehensive multiple-use programs is a critical one. At present, no one woodland use, be it forestry, recreation, water soil or wildlife conservation or livestock grazing can justify the high initial costs of open or poorly stocked land and the long periods during which the land must remain unused. However, when these considerations can be brought into balance, forest land under multiple use can, over a period of time, become a significant asset to the overall economy of the state and its local areas.

It is recommended that the State Planning Commission conduct an intensive study into means of developing multiple use programs in the various regions and local areas of the State. These programs should include means of achieving the inclusion of Federal, state and local government forests, lands owned by the state's forest industries and the state's farm and non-farm private woodlands as well. This study and the programs which would result from it should be prepared with the close cooperation of the interests mentioned and should further include the participation of the regional and local planning and development agencies in the state.

The greatest need upon Georgia's rural scene is a means of comprehensive redevelopment of many of the state's rural areas. The

findings of this study indicate that the economy of many of the depressed rural areas in Georgia is directly related to the amount of un-used or mis-used land in the areas. The need for rural redevelopment is comparable to the need for redevelopment of urban areas. It becomes obvious that rural, like urban areas, simply cannot survive if they must continue to pay the high economic costs brought about by un-use or mis-use of land.

It is strongly recommended that Federal aid similar to that available to urban areas be provided to assist in the comprehensive development and redevelopment of rural areas.

It is recommended that this aid be administered by the Area Redevelopment Administration of the U. S. Department of Commerce. The Area Redevelopment Administration is now providing financial aid to depressed areas to help in reducing chronic unemployment and under-employment. This aid is more directed to economic development study than to comprehensive planning and redevelopment at this writing and it is recommended that the present scope of the agency be greatly expanded.

It is recommended that the role of the Area Redevelopment Administration be one of financial assistance in the formulation of state, regional and local comprehensive development and redevelopment plans. The lack of such planning has been a serious handicap to many local areas which have applied to the Area Redevelopment Administration for assistance. A second role of the Area Redevelopment Administration should be in providing financial assistance to local areas in carrying development and redevelopment programs. A third role which the Area

Redevelopment Administration could assume should be that of coordination, on the Federal level, of the activities of other agencies whose assistance can contribute to the success of area development and redevelopment programs.

It is recommended that the State of Georgia adopt enabling legislation which would allow and set general standards for rural areas to undertake comprehensive development and redevelopment programs. This legislation should be drafted by the State Planning Commission and should set forth the general planning requirements of a "workable program" for rural area development and redevelopment. Since it can be anticipated that many local areas of Georgia are lacking in technical skills and competence, the enabling legislation should also specify the means to be used by local areas in formulating and carrying out their workable programs.

It is recommended that the enabling legislation provide for adequate technical assistance, first in formulating plans, and second, in administering them. The major problem in both instances will be found on the local level, because of this it is recommended that local representatives of the Federal-state Extension Service be utilized in both the preparation and the undertaking of rural development and redevelopment programs. This activity should be under the general guidance of the Institute of Community and Area Development of the University of Georgia which deals with many rural problems and works closely with the Extension Service in local areas.

Through participation of these agencies a valid determination of local conditions could be made and recommendations reflecting these



conditions could be instituted by the State Planning Commission in the Planning and administration of individual programs.

In this manner, the role of the state would be one of providing the long range state planning, financial and technical assistance to regional areas and similar assistance to local areas with the added technical and administrative assistance of both the Institute of Community and Area Development and the Federal-state Extension Service when required.

In summary, it is recommended that the Area Redevelopment Administration provide financial assistance to the state to be used, first, for the formulation of state, regional and local comprehensive plans, and second, for implementing these plans in local areas. The state, through the State Planning Commission, regional and local planning agencies, the Institute of Community and Area Development and the Federal-state Extension Service would utilize this assistance in providing effective and comprehensive development and redevelopment plans and in administering their implementation. Through such joint effort it can be anticipated that much of the poorly productive land in Georgia can again contribute to the growth and stability of the state and its rural areas and urban communities.

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